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W.L. Brown, Jr.
COLLECTION

Studia Ent., vol. 19, fasc. 1-4, dezembro de 1976 187

Which Are The Most Prevalent Ant Genera?[1]

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Introduction

Prevalence is a concept often discussed by taxonomists and ecologists, sometimes under other names such as «dominance» and «success», but seldom defined with any precision. The intuitive components of prevalence appear to me to be four in number: species diversity (in the case of higher categories), extent of the geographic range, diversity of adaptations, and local abundance. Prevalence can be defined in terms of any arbitrarily selected geographic area, ranging all the way from single local habitats to the entire world. It can also be defined with reference to any taxonomic category, from species upward to phyla. The interesting question is whether the components of prevalence just listed are correlated with each other. For example, are the ant genera found over the largest part of the globe also the ones most abundant in local habitats? Do they also contain the largest number of species, and do these species in turn display among themselves the greatest array of adaptations? To the extent that such correlations exist, we are justified in calling the highest ranking genera dominant in both a biogeographic sense and ecological sense, and we are presented with the interesting problem of identifying the special qualities that set the genera apart from less prevalent genera.

Few detailed accounts of the components of prevalence have been attempted for most groups of organisms, at least on a continental or global basis. In the sections to follow are given the author's subjective estimates of the relative abundance of ant genera in tropical localities where he has collected in past years. These will then be compared with rough approximations of the remaining components of prevalence made largely from the literature.

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[1] Dedicated to the memory of Father Thomas Borgmeier, pioneering Brazilian entomologist. The author is indebted to Professor W. L. Brown for constant help and advice and to Professor P. J. Darlington, N. Hairston, and L. B. Slobodkin for useful suggestions on portions of the manuscript.

Results

While estimates from collecting trips are obviously inferior to studies made at the species level and do not achieve the precision of quadrat sampling of the type practiced by Headley (1952), Talbot (1953, 1957), and Yasuno (1965), for example, it is hoped that they will be useful as first approximations for the tropical faunas involved. The estimates were made in the field following four days to a month of intensive collecting at each locality. Several collecting techniques were employed simultaneously, including detailed hand sorting of principal nest sites and sifting with Berlese funnels.

In the choice of criteria of abundance, it is possible to utilize at least three distinct measurements: (1) number of individual adult ants, (2) number of individual colonies, (3) species biomass. Only the first two can be judged with any hope of accuracy by a collector working under the limiting conditions that prevail in most parts of the tropics. Of these the second measurement, number of colonies, can be estimated with greater precision, and for this reason it was chosen. This measure taken alone of course has an obvious drawback. It tends to underrate those genera, such as *Acidomyrmex, Acropyga,* and *Pseudolasius,* that form exceptionally large colonies and maintain dominance over small local areas in the forest. Looked at in another way, estimate by colonies roughly parallels the well-known «lowest density» measure suggested by Pickles (1938), namely the total population divided by the area covered by the census. It offers no clue to the «economic density», which is the total population divided by the territory actually occupied, which measure provides an indication of prevalence of a given species in the vicinity of its nests. A rough subjective appraisal can be obtained by taking into account colony size, given for many of the Papuan species in a paper published earlier (Wilson, 1959a).

The following conventions in indicating relative abundance are used. The genera are listed in order of estimated abundance. Percentages (of total colony number) are given in the cases where quantitative estimates were attempted. Where two or more genera were considered of about equal abundance, or collections were inadequate to allow distinctions, the genera are grouped together within parentheses. A line of three dots separating genera or groups of genera signifies what was judged to be an unusually well marked difference in colony frequency.

Lower Busu River, Huon Peninsula, New Guinea

Ground zone. (For a full description of the ecological strata at this locality, see Wilson, 1959a). *Pheidole* 30-40%, *Ponera* (including *Hypoponera*) 10-20%, *Strumigenys, Rhytidoponera, Tetramorium* (with *Xiphomyrmex*), *Aphaenogaster* subg. *Planimyrma, Brachyponera, (Myopias, Odontomachus, Leptogenys, Cerapachys, Myrmecina, Cardiocondyla, Pristomyrmex, Triglyphothrix, Leptomyrmex), (Rhopalothrix, Dacetinops, Acropyga), (Mesoponera, Gnamptogenys, Cryptopone, Trachymesopus, Prionopelta, Ectomomyrmex, Anochetus, Platythyrea, Aenictus, Monomorium, Vollenhovia, Meranoplus, Adelomyrmex, Lordomyrma, Kyidris, Oligomyrmex, Pheidologeton, Acidomyrmex, Heptastruma, Solenopsis, Opisthopsis, Paratrechina* subg. *Nylanderia, Plagiolepis, Pseudolasius*). The group *Myopias-Leptomyrmex* made up an estimated 10-15% of all colonies, while the last group, *Mesoponera-Pseudolasius*, contributed less than 2%.

Low arboreal zone. (Not estimated).

High arboreal zone. *Iridomyrmex* 30-40%, *(Podomyrma, Polyrhachis* subgg. *Cyrtomyrma* and *Myrma)* 10-20%, *Oecophylla, Crematogaster, Camponotus, (Dilobocondyla, Turneria, Calomyrmex, Polyrhachis* subgg. exclusive of *Cyrtomyrma* and *Myrma)* < 4%.

Mountains of the Huon Peninsula, New Guinea

On the Huon Peninsula ants were very abundant from the lowland forests up to the level of the cloud zone, which commences at about 1000 meters. At a foothills rain forest locality such as Wamuki, located at 800 meters, the ant fauna seems to be as rich in species and individual colonies as at nearby lowland localities. Within the cloud zone, however, conditions become noticeably less favorable for ants, and the fauna is considerably diminished. Moss is abundant on the trees and forms extensive mats on the forest floor; undergrowth is much thicker, further diminishing insolation of the ground; and pieces of rotting wood suitable as nest sites are scarcer. In the vicinity of Gemeheng and Tumnang, at about 1500 meters, and at similar localities in the upper Bunbok Valley, the ant population is limited mostly to clearings and second-growth forests, and even in these most favorable habitats its density is probably less than half that at lowland localities. Within the denser primary forest, the ground is covered in most places by a wet, cold layer of moss. During the time of the author's visit, in April and May, the mornings were usually sunny and warm, but nearly every afternoon mists and rain settled in early, and temperatures dropped to 17°-19°C.

At this elevation the order of abundance of genera was notably different from that in the lowland forests.[2]

Ground zone. *(Brachyponera, Ponera* plus *Hypoponera), Tetramorium, (Rhytidoponera, Aphaenogaster* subg. *Planimyrma, Leptomyrmex), (Meranoplus, Pheidole, Strumigenys, Cardiocondyla),... (Amblyopone, Discothyrea, Proceratium, Myopias, Trachymesopus, Arnoldidris, Ancyridris).*

Arboreal zones. Arboricolous ants were moderately common in open second-growth but extremely scarce in the closed primary forest. *Polyrhachis* subgg. *Chariomyrma* and *Cyrtomyrma,... (Podomyrma, Technomyrmex, Camponotus),... (Iridomyrmex, Crematogaster).*

During a trip through the upper Bunbok Valley to the 4000-meter crest of the central Saruwaged Mountains, an effort was made to determine the upper elevational limits of ants. Above 1500 meters these insects became very scarce. During one seven-hour walk through primary forest between 1600 and 2000 meters, the only ants seen were foraging workers of a single colony of an undescribed species of *Ancyridris*. Later, at approximately 2300 meters, just within the lower limits of the moss-dominated montane rain forest, a single colony of *Cardiocondyla wheeleri* Viehmeyer was found. This is to date the highest elevational record for an ant on the Huon Peninsula.[3] Intensive search through the mossy forest to its upper limit at about 3600 meters, and beyond, out onto the alpine savanna of the Saruwaged crest, failed to reveal a single ant.

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[2] But it should be noted that the mountain ant fauna is phylogenetically close to the lowland fauna and has almost certainly been derived from it. Some species occur both in the lowlands and in clearings in midmountain forest [*e. g., Rhytidoponera laciniosa* Viehmeyer, *Diacamma rugosum* (Le Guillou), *Cardiocondyla paradoxa* Emery, *Polyrhachis erosispina* Emery].

[3] Dr. J. J. H. Szent-Ivany found ants similarly very scarce or absent in the mossy forests of the Central Highlands. On the Asoro-Chimbu Divide near Goroka, at 2600 meters, he and a small party of native assistants were unable to find a single ant during several hours search (Szent-Ivany, pers. commun.). However, I have seen workers of two unidentified species belonging to *Podomyrma* and *Iridomyrmex* which were collected by Dr. J. L. Gressitt between 2500 and 3000 meters on Mt. Wilhelm. Dr. Gressitt believes that this material came from «a partly grown-over agricultural area with scattered, older, taller trees just a little above what may be the highest village in northeastern New Guinea» (pers. commun.). The presence of agricultural clearings, in themselves an unusual feature at such a high elevation, may account for this range extension.

Nadzab, Markham Valley, New Guinea

Monsoon forest near the junction of the Markham and Erap Rivers.

Terricolous. *(Brachyponera, Tetramorium, Pseudolasius), (Ponera* plus *Hypoponera, Rhytidoponera, Leptogenys, Pheidole, Pheidologeton, Pristomyrmex), (Odontomachus, Anochetus).* The reduction of *Ponera* (including *Hypoponera*) and *Pheidole* to lesser abundance at this locality was apparently due at least in part to the relative scarcity of moist, rotting logs and stems on the ground, the favored nesting site of these genera in Melanesia. Another interesting feature of the ecology of the Nadzab fauna was the presence of large numbers of foraging workers of a species of *Crematogaster* — *C. (Acrocoelia) irritabilis* (Fr. Smith) — on the ground. This species was apparently arboricolous and also foraged arboreally. *Crematogaster*, including *C. irritabilis* itself, is a genus whose workers were rarely if ever seen to venture onto the ground at other Melanesian localities visited.

Arboricolous. *Crematogaster* (species: *C. irritabilis;* see above),... *Polyrhachis* especially subg. *Chariomyrma, (Platythyrea, Echinopla, Camponotus),... (Dilobocondyla, Podomyrma, Iridomyrmex).*

Bisianumu, Papua

Mixed primary and secondary foothills rain forest at 500 meters elevation.

Terricolous. *Pheidole* especially subg. *Pheidolacanthinus,... (Odontomachus, Trachymesopus), Ponera* (including *Hypoponera), Strumigenys, Platythyrea, Leptomyrmex, (Prionopelta, Gnamptogenys, Rhytidoponera, Myopias, Leptogenys, Cryptopone, Anochetus, Oligomyrmex, Tetramorium, Cardiocondyla, Ancyridris, Monomorium, Aphaenogaster* subg. *Planimyrma, Tapinoma, Paratrechina* subg. *Nylanderia, Pseudolasius, Camponotus).*

Arboricolous. *(Iridomyrmex, Polyrhachis), Crematogaster, (Diacamma, Echinopla, Calomyrmex),... (Podomyrma, Mesoxena, Oecophylla).*

Karema, Brown River, Papua

Primary lowland rain forest.

Terricolous. *(Pheidole, Oligomyrmex), Odontomachus, Acropyga, Brachyponera, Ponera* (including *Hypoponera), Strumigenys, Pseudolosius, (Prionopelta, Ectomomyrmex, Bothroponera, Platythyrea, Leptogenys, Aenictus, Monomorium, Vollenhovia, Tetramorium, Paratrechina* subg. *Nylanderia).*

Arboricolous. *Crematogaster, Iridomyrmex, Camponotus, Polyrhachis, Oecophylla.*

Ratard Plantation, Luganvile, Espiritu Santo, New Hebrides

Collecting was conducted in primary lowland rain forest from the coast to several kilometers inland.

Terricolous. *Pheidole, Odontomachus, Vollenhovia,... (Ponera* plus *Hypoponera, Leptogenys, Pristomyrmex, Myrmecina, Strumigenys, Quadristruma, Polyrhachis).*

Arboricolous. *Crematogaster* subg. *Orthocrema, Camponotus, Turneria.* All three of these genera were very abundant. *Podomyrma, Iridomyrmex, Oecophylla,* and many other prominent Indo-Australian genera were completely lacking.

Nadala, Viti Levu, Fiji Islands

Slightly disturbed foothills rain forest.

Terricolous. *Pheidole* especially subg. *Electropheidole, Ponera* (including *Hypoponera*), *Solenopsis* subg. *Diplorhoptrum, Paratrechina* subg. *Nylanderia,... Strumigenys,... Cerapachys, Lordomyrma* (= *Irogera*).

Arboricolous. *Tetramorium, Camponotus* subg. *Myrmegonia.* In cultivated fields around Nadala, *Monomorium floricola* (Jerdon), *Technomyrmex albipes* (Fr. Smith), and *Tapinoma melanocephalum* (Fabr.) abounded, but these introduced species were absent in the native forest.

Chapeau Gendarme, Yahoué, New Caledonia

Collecting was conducted in an isolated tract of native semi-deciduous angiosperm forest surrounded by *Melaleuca* savanna.

Terricolous. *Pheidole, (Meranoplus, Tetramorium, Paratrechina* subg. *Nylanderia), (Ponera* plus *Hypoponera, Leptomyrmex, Camponotus), (Anochetus, Calyptomyrmex, Monomorium, Lordomyrma, Vollenhovia, Strumigenys), (Leptogenys, Cerapachys, Orectognathus).*

Arboricolous. The only arboricolous ants found were a few colonies of *Crematogaster (Orthocrema)* and *Iridomyrmex,* which were nesting in cavities in tree trunks. Not a single ant colony was found in hollow branches or stems of standing trees, and foraging ants seemed generally scarce in the forest canopy. Most of the individuals found foraging on low vegetation belonged to terricolous species. The paucity of arboricolous species and individuals in this and other New Caledonian localities is one of the most surprising features of the ecology of the island's fauna, and stands out in marked contrast to the presence of rich arboricolous faunas throughout the remainder of Melanesia, including the nearby northern New Hebrides. Here also there is a heavy upward migration of foraging ants from terricolous colonies, just the opposite of the situation in New Guinea (see Wilson, 1959a), where the predominant vertical movement of foraging ants is from arboricolous nests downward.

Mt. Mou, New Caledonia

Intensive collecting was conducted between 180 and 400 meters in a valley-bottom forest which differed from that at Chapeau Gendarme only in being somewhat moister and more extensive.

Terricolous. *Pheidole, Paratrechina* subg. *Nylanderia, Ponera* (including *Hypoponera*), *Monomorium, Rhytidoponera, Leptomyrmex, Meranoplus, Anochetus, (Prionopelta, Discothyrea, Trachymesopus, Cerapachys, Prodicroaspis, Oligomyrmex, Orectognathus, Lordomyrma, Strumigenys). Meranoplus* was limited to the drier parts of the forest and *Anochetus* to clearings; the latter genus (represented only by *A. graeffei* Mayr) may be introduced. *Tetramorium,* so abundant at Chapeau Gendarme, was lacking at Mt. Mou.

Arboricolous. As at Chapeau Gendarme, the arboricolous fauna was very sparse. A colony of *Crematogaster (Orthocrema)* was found in a cavity in the side of a living tree trunk, and several colonies of *Monomorium* and *Camponotus* were found in the dead, hollow stems of bushes.

Ciu, New Caledonia

Rich broadleaf evergreen forest at 300 meters elevation.

Terricolous. *Pheidole, Rhytidoponera, Leptogenys, Paratrechina* subg. *Nylanderia, (Ponera* plus *Hypoponera, Cerapachys, Lordomyrma, Monomorium, Orectognathus, Strumigenys), (Promeranoplus, Tetramorium, Calyptomyrmex), Rhopalothrix. Paratrechina* was limited mostly to the drier portions of the forest. *Cerapachys* was distinctly more common than at Mt. Mou, and *Monomorium* less so.

Arboricolous. As at other New Caledonian localities, the true arboricolous fauna was very sparse. No arboricolous colonies at all were found at 300 meters; at a nearby locality situaded at 500 meters a single colony of *Camponotus* was found living in a dead, hollow stem of a small tree.

Montagne des Sources, New Caledonia (800 meters)

A brief visit was made to the native mountain forest surrounding the head of the Dumbéa River. The forest was composed mostly of broadleaf evergreens with a strong admixture of gymnosperms of the genera *Araucaria* and *Agathis*. The fauna was notably sparser in both species and individual colonies than at lower elevations on New Caledonia.

Terricolous. *Pheidole, Ponera* (including *Hypoponera), Paratrechina* subg. *Nylanderia, Monomorium, (Rhytidoponera, Tetramorium, Camponotus).*

Arboricolous. As at lowland New Caledonian localities, the arboricolous fauna of Montagne des Sources proved to be depauperate. Only a few foraging individuals of presumably arboricolous *Crématogaster (Orthocrema)* and *Iridomyrmex* were found during several hours' search.

Montagne des Sources, New Caledonia (1000 meters)

At this higher elevation the forest consisted almost entirely of second-growth *Araucaria,* with an understory of *Araucaria* seedlings, angiosperm shrubs, *Pandanus,* and tree ferns. The ant fauna was merely a depauperate extension of that found at 800 meters. A few individuals of *Monomorium* and *Paratrechina (Nylanderia)* were collected in soil-humus berlesates. A species of *Camponotus,* probably terricolous, and an arboricolous *Iridomyrmex* were relatively common on low vegetation during the day. A single colony of *Monomorium* was found nesting in a cavity of a live *Freycenetia* stem.

Paluma Range, near Townsville, Queensland

Collecting was conducted in broadleaf evergreen forest at several localities in the vicinity of Paluma and Mt. Epec, at about 900 meters elevation.

Terricolous. *Pheidole,... (Rhytidoponera, Oligomyrmex, Iridomyrmex, Paratrechina* subg. *Nylanderia), (Trachymesopus, Mesoponera, Bothroponera, Strumigenys).*

Arboricolous. Poor collecting conditions prevented an adequate evaluation of relative abundance in the arboricolous fauna.

Kandy, Sri Lanka (Ceylon)

Collecting was conducted in disturbed tropical evergreen forest within the Udawaddatekele Sanctuary, the old Royal Gardens of the Kandy kings.

Terricolous. The total density of ground-dwelling ants was considerably less than in comparable areas in Melanesia, apparently due to the relative scarcity of small pieces of rotting wood on the ground. This condition is in part caused by the incessant activities of Singhalese wood-gatherers from Kandy, but it is also partly due to intense competition from the wood-dwelling termite fauna, which is richer in species and denser in colonies than in Melanisia. *(Ponera* plus *Hypoponera, Pheidole), Myrmicaria, Solenopsis* subg. *Diplorhoptrum, Tetramorium* (with *«Xiphomyrmex»), Mesoponera, (Leptogenys, Paratrechina* subg. *Nylanderia, Pseudolasius).*

Arboricolous. *Technomyrmex, Polyrhachis, Camponotus,... Crematogaster.*

Gilimale, Sri Lanka (Ceylon)

Collecting was conducted in somewhat disturbed rain forest between the village of Gilimale and the foot of Adam's Peak.

Terricolous. The order of genus-abundance is similar to that at Kandy, with the striking introduction of the unusual, primitive genus *Aneuretus. (Ponera* plus *Hypoponera, Pheidole), Myrmicaria, Aneuretus, Paratrechina* subg. *Nylanderia, Mesoponera, Brachyponera, Tetramorium* (with «*Xiphomyrmex*»).

Arboricolous. *Technomyrmex, Polyrhachis, Camponotus,... Crematogaster.*

Pueblo Nuevo, Veracruz, Mexico

Somewhat disturbed lowland rain forest.

Terricolous. *Wasmannia, Solenopsis* subg. *Diplorhoptrum, Pheidole, Prionopelta, Strumigenys, Neostruma, Rogeria, Paratrechina* subg. *Nylanderia, Octostruma, Odontomachus, (Apterostigma, Atta, Apsychomyrmex, Glamyromyrmex).*

Arboricolous. *Wasmannia, Azteca, Pseudomyrmex, Zacryptocerus, (Leptothorax, Camponotus).*

State of Chiapas, Mexico

Brown (1957) published estimates of relative abundance of terricolous genera in tropical evergreen forests in Chiapas that are remarkably parallel to those just given for Pueblo Nuevo, despite the fact that they are based entirely on random Berlese collections.[4] He states, «The soil and soil-cover samples are, of course, quite different from the epigaic-arboreal collections... On the forest floor, *Wasmannia auropunctata* (Roger), small species of *Solenopsis (Diplorhoptrum), Prionopelta modesta* Forel, and several of the smaller Dacetini are the commonest forms, present in nearly every Berlese sample taken, while *Pachycondyla harpax* (Fabricius), *Ponera nitidula* Emery, *Ponera* [including *Hypoponera* — E. O. W.] spp., and *Brachymyrmex* are rather frequent». The genera in this quotation are listed in order of abundance (Brown, pers. commun.).

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[4] Made by C. and M. Goodnight and L. J. Stannard.

Indexing Relative Abundance

In order to rank-order the ant genera with reference to colony abundance (number of colonies per unit area), an elementary «abundance index» was derived in the following two steps. First, for each locality the ten most abundant terricolous genera were assigned scores as follows: the most abundant genus was scored as 10, the second most abundant as 9, and so on down to a score of 1 given to the genus estimated to be the tenth most abundant at that locality. The five most abundant arboricolous genera were scored in the same fashion: the most abundant genus was scored as 10, the second most abundant as 9, and so on down to a score of 6 given to the fifth most abundant genus. A total of fifteen localities were analyzed; not included were Montagne des Sources (1000 meters), where collections were too incomplete, and Chiapas, where collecting was done entirely with Berlese funnels. Next, the abundance index was calculated from the combined data:

$$\text{«Abundance index» of genus} = \frac{\text{Summed score over all 15 localities} \times 10}{\text{Maximum possible summed score with respect to the localities actually occupied by the genus}}$$

Note that in calculating the abundance index a given genus is scored only with respect to those localities in which it is known to occur. In localities where it is absent, there always exists a possibility (in many cases a certainty) that chance historical phenomena, rather than purely biotic factors, have operated to eliminate it. For example, *Polyrhachis* is a widespread and abundant genus in the Old World tropics. But it is also apparently a relatively young genus (being absent in both the Baltic and Sicilian amber faunas) and it does not appear to have had sufficient time to spread to the New World. It would be therefore quite meaningless to rank *Polyrhachis* with respect to New World localities.

In Table 1 are given the abundance indices for the sixteen terricolous and seven arboricolous genera with the highest scores. There is a breakdown into two geographic divisions, Melanesia exclusive of New Caledonia and New Caledonia plus all non-Melanesian localities. As shown elsewhere (Wilson, 1959b, 1961), the New Caledonian ant fauna has been derived mostly, if not entirely, from the fauna of eastern Australia and is not directly related to that of the rest of Melanesia. It will be noted that these data are heavily biased in favor of Indo-Australian rain forest genera. The New World tropics are represented by only a single locality (out of fifteen), and Africa is not represented at all. Yet it is the author's opinion, based on his own field experience and impressions gained from the descriptive ecological literature, that the first approximations thus derived have a high probability of representing a world-wide trend.

Discussion: The Most Prevalent Genera

At least three of the four components of prevalence are closely correlated on a world scale: local abundance, as measured by the abundance index (Table 1); species diversity, as measured by number of species; and extent of geographic distribution. The three most species-rich genera in the world are *Pheidole* (Myrmicinae), *Crematogaster* (Myrmicinae), and *Camponotus* (Formicinae). In Table 2 are given the numbers of species in these groups, broken down to zoogeographic region, as they were known at the time of Emery's revision. It will be noted that each of these genera is found in every one of the regions and is diverse in most or all. Furthermore, each is among the most abundant of the ants in the localities reported in the present study. Finally, my general impression is that species diversity reflects ecological diversity, although the latter quality cannot be subjected to any quantitative measure at this time. Brown (1973) has also singled out the three genera as «world-dominating» on the basis of an independent analysis.

Table 3 presents the rank order of *Pheidole, Crematogaster,* and *Camponotus* in total prevalence and in the components of prevalence, with one component (ecological diversity) being judged subjectively. The clear «winner» in this particular contest is *Camponotus,* a genus of large polymorphic ants that has existed since at least Oligocene times (Baltic amber) and is now the largest and most widespread of all ant genera. It is also one of the ecologically most diversified. The biomass of its species is very large, but because of the large size of the workers and the relatively extensive area occupied by each colony, its overall colony density, the measure used in the present study, is lower than that of other prevalent genera.

Table 1

Combined estimates of colony abundance of various tropical ant genera

	Melanesia (exclusive of New Caledonia)		New Caledonia & non-Melanesian localities		Total	
Genus	Localities occupied (%)	Abundance Index	Localities occupied (%)	Abundance Index	Localities occupied (%)	Abundance Index
TERRICOLOUS						
Pheidole	100.0	9.5	100.0	9.8	100.0	9.6
Ponera (with *Hypoponera*)	100.0	8.4	75.0	8.5	86.7	8.2
Odontomachus	71.4	7.6	12.5	1.0	40.0	6.5
Tetramorium (with *Xiphomyrmex*)	57.1	7.0	62.5	6.0	60.0	6.4
Brachyponera	57.1	7.8	25.0	3.0	40.0	6.2
Strumigenys	71.4	6.6	50.0	5.5	60.0	6.1
Paratrechina (subg. *Nylanderia*)	57.1	3.8	100.0	7.1	80.0	6.0
Solenopsis (subg. *Diplorhoptrum*)	28.6	4.5	12.5	9.0	20.0	6.0
Leptomyrmex	42.9	5.3	25.0	6.5	30.0	5.8
Monomorium	28.6	3.5	50.0	6.8	46.7	5.7
Leptogenys	71.4	5.2	37.5	6.3	53.3	5.6
Oligomyrmex	42.9	5.0	25.0	5.5	33.3	5.2
Trachymesopus	42.9	5.3	25.0	5.0	33.3	5.2
Meranoplus	28.6	4.0	25.0	6.5	26.6	5.0
Anochetus	42.9	4.3	25.0	5.0	33.3	4.6
Pseudolasius	57.1	4.8	0	—	26.6	4.8
ARBORICOLOUS						
Technomyrmex	42.9	9.7	0	—	20.0	9.7
Iridomyrmex	57.1	8.8	37.5	9.7	46.7	9.1
Polyrhachis	57.1	9.5	37.5	8.3	46.7	9.0
Crematogaster	71.4	8.8	75.0	9.0	73.3	8.9
Camponotus	62.5	8.2	62.5	8.4	66.7	8.3
Podomyrma	57.1	8.0	0	—	26.7	8.0
Oecophylla	42.9	7.0	0	—	20.0	7.0

Additional ant genera and subgenera that are prevalent on a global scale include *Amblyopone* (Ponerinae), *Hypoponera* (Ponerinae), *Odontomachus* (Ponerinae), *Solenopsis* subgenus *Diplorhoptrum* (Myrmicinae), *Oligomyrmex* (Myrmicinae), *Strumigenys* (Myrmicinae), *Monomorium* (Myrmicinae), *Leptothorax* (Myrmicinae), *Tapinoma* (Dolichoderinae), and *Paratrechina* subgenus *Nylanderia* (Formicinae). Useful data on the distribution of these and other widespread genera are provided in the generic catalog by Brown (1973).

We can now phrase the important question: Do these biogeographically leading genera have certain distinguishing physical and behavioral traits in common that are responsible

Table 2

Number of species in three of the largest ant genera as listed by Emery in the *Genera Insectorum* (1922, 1925).

	African	Oriental	Australian-Oceanic	Palaearctic	Nearctic	Neotropical-Antillean	World
Pheidole	66	95	44	1	40	153	391
Crematogaster	105	76	33	9	7	41	274
Camponotus	152	122	108	37	33	217	641

for their success? The answer appears to be: *Quite the contrary.* The successful genera are notable for their great diversity. In phylogenetic position, body size, anatomical characteristics, colony organization, and ecological adaptation, they differ from one another to a greater degree than would be expected by chance alone. I would like to suggest that the leading ant genera have «conquered the world» because, in part, they are different enough to be ecologically compatible with one another. The prerequisites for global or continental success would seem to be, first, some adaptation that permits penetration of a wide range of environments, and, second, either sufficient idiosyncracy in the adaptation to reduce competition strongly or else the capacity to exclude one of the reigning genera by competition. Brown (1973) has concluded that *Crematogaster* has in fact taken the last option. It appears to be in the process of replacing the dolichoderine genus *Iridomyrmex,* which is behaviorally and ecologically similar to it and was globally prevalent during most of the Tertiary Period. Today *Iridomyrmex* is limited to the New World, tropical Asia, and the Australian region, and it is best developed in areas with relatively weak *Crematogaster* faunas.

Table 3

The rank order in prevalence and the components of prevalence in the three most species-rich genera of the world ant fauna.

	Rank Order in Four Biological Properties				
	Taxonomic diversity	Endemic range	Ecological diversity	Local abundance	Overall Rank Order
Pheidole	2	2	2	1	2
Crematogaster	3	3	3	2	3
Camponotus	1	1	1	3	1

Summary

Subjective estimates of the relative abundance of ant genera are given for seventeen tropical localities in Melanesia, Sri Lanka (Ceylon), and Mexico.

Local abundance is noted to be only one of four components which we intuitively associate with biogeographic and ecological «prevalence»; the others are species diversity, diversity of adaptations, and geographic range. Ant genera are evaluated with respect to these elements and the following three identified as the most prevalent on a global scale, in order of rank: *Camponotus*, *Pheidole*, and *Crematogaster*. These, and other, somewhat less prevalent genera do not appear to be distinguished by any common physical or behavioral trait to which their success can be attributed. On the contrary, they are more diverse in phylogenetic position, anatomy, and adaptation than would be expected by chance alone; and it is suggested that the ability to avoid competitive replacement by other prevailing groups is one of the prerequisites of prevalence.

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